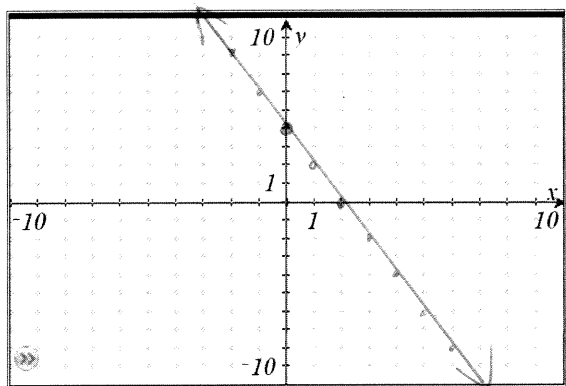


Unit 1 Day 2: Graphing lines

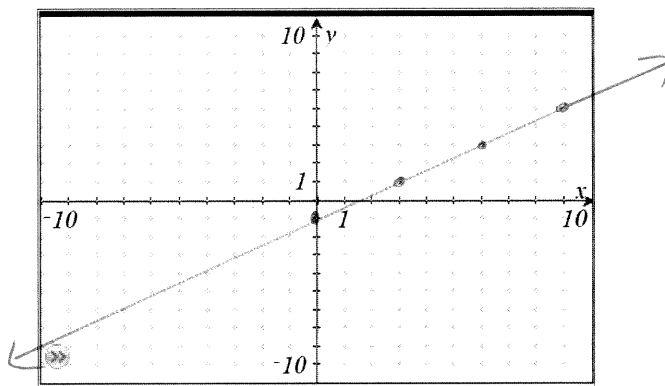
Name Answer Key Per \_\_\_\_\_

Graph the equations given.

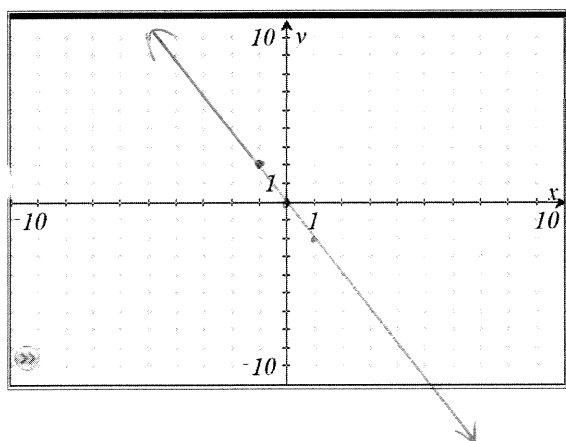
1.  $y = -2x + 4$



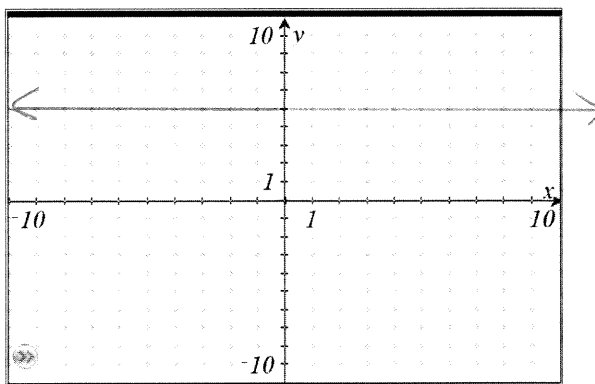
2.  $y = \frac{2}{3}x - 1$



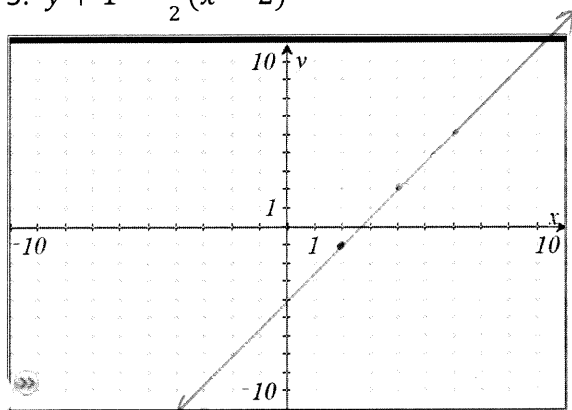
3.  $y - 2 = -2(x + 1)$



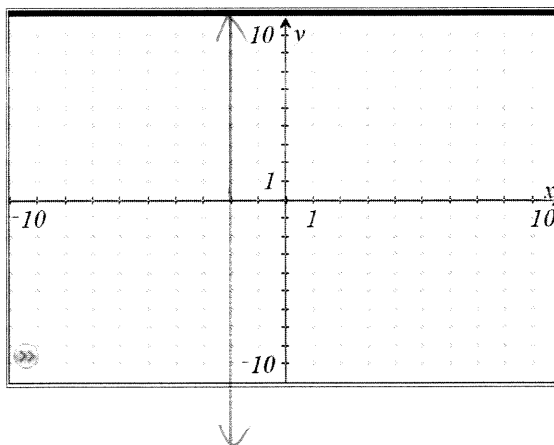
4.  $y = 5$



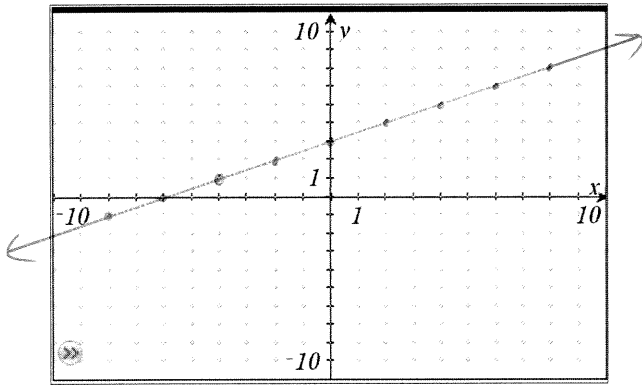
5.  $y + 1 = \frac{3}{2}(x - 2)$



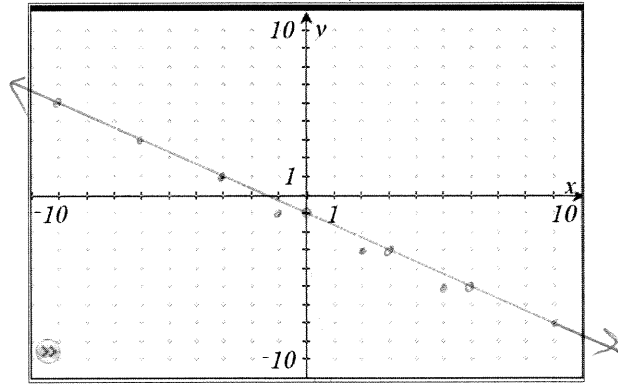
6.  $x = -2$



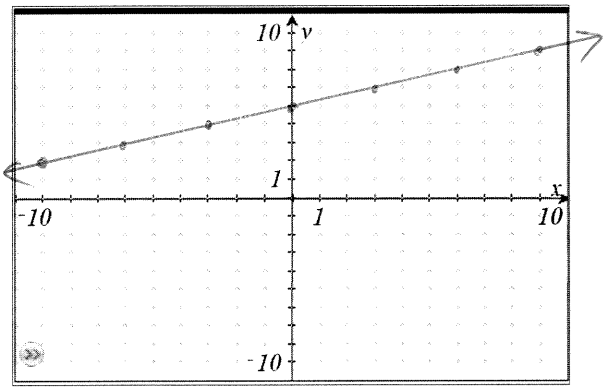
7. Parallel to  $y = \frac{1}{2}x + 2$  through point  $(-4,1)$



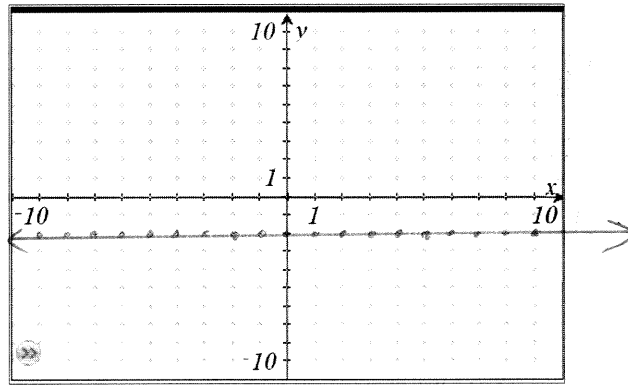
8. Perpendicular to  $y = \frac{3}{2}x - 4$  through point  $(-3,1)$



9. Parallel to  $x - 3y = 5$  through point  $(-3,4)$



10. Perpendicular to  $x = -4$  through point  $(-5,-2)$



\*11. Find the point slope form and slope intercept form of the line containing the points  $(-7,-2)$  and  $(1,6)$ .

$$m = \frac{8}{8} = 1$$

$$y - 6 = 1(x - 1)$$

$$y = x + 5$$

\*12. List all the segments that have a) positive, b) negative, c) zero and d) undefined slope(s).

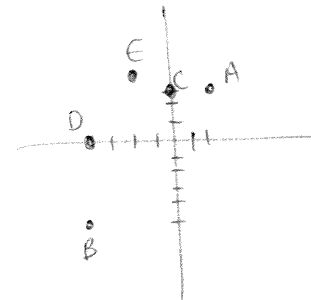
A(2,3) B(-4, -5) C(0,3) D(-4, 0) E(-2, 4)

a) AB, AD, BC, BE, CD, DE

b) AE, CE

c) AC

d) BD



\*13. Find the equation of a line that is parallel to  $2y - 3x = 6$  through point  $(1,-2)$ .

$$y = \frac{3}{2}x + 3$$

$$y + 2 = \frac{3}{2}(x - 1)$$

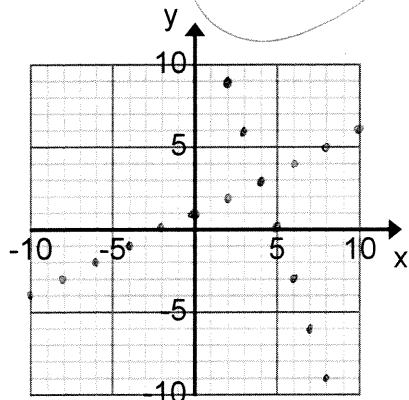
$$y = \frac{3}{2}x - \frac{7}{2}$$

Graph by hand to find the solutions to the systems.

# missed \_\_\_\_\_ Time \_\_\_\_\_

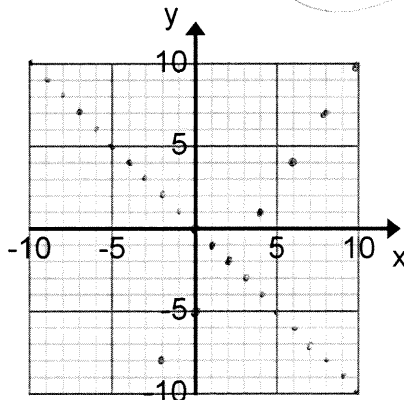
1.  $-x + 2y = 2$   
 $3x + y = 15$

$y = \frac{1}{2}x + 1$   
 $y = -3x + 15$

 $(4, 3)$ 

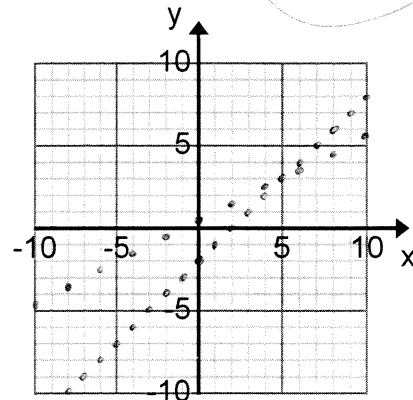
2.  $x + y = 0$   
 $3x - 2y = 10$

$y = -x$   
 $y = \frac{3}{2}x - 5$

 $(2, -2)$ 

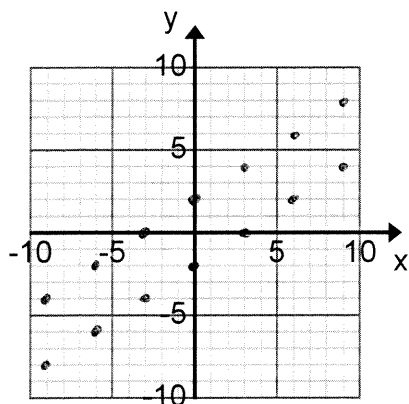
3.  $-x + 2y = 1$   
 $x - y = 2$

$y = \frac{1}{2}x + \frac{1}{2}$   
 $y = x - 2$

 $(5, 3)$ 

4.  $-\frac{2}{3}x + y = 2$   
 $2x - 3y = 6$

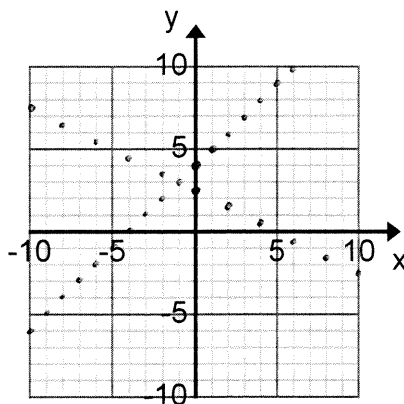
$y = \frac{2}{3}x + 2$   
 $y = \frac{2}{3}x - 2$



No solution

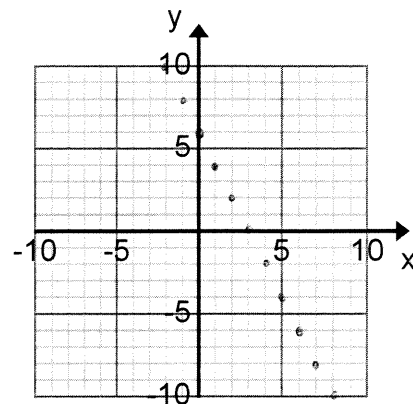
5.  $x - y = -4$   
 $x + 2y = 5$

$y = x + 4$   
 $y = -\frac{1}{2}x + \frac{5}{2}$

 $(-1, 3)$ 

6.  $2x + y = 6$   
 $-4x - 2y = -12$

$y = -2x + 6$   
 $y = -2x + 6$



Infinitely many

Solve the systems of equations using a graphing calculator.

7.  $2x - y = 0$   
 $x^2 - y = -1$

$y = 2x$   
 $y = x^2 + 1$

$(1, 2)$

8.  $2x^2 - y = 3$   
 $x + y = 4$

$y = 2x^2 - 3$   
 $y = -x + 4$

$(-2.137, 6.137)$   
 $(1.637, 2.363)$

9.  $x^2 + y = 1$   
 $x + y = 2$

$y = -x^2 + 1$   
 $y = -x + 2$

No solution

10.  $y = 2x + 1$   
 $y = \sqrt{x + 2}$

$(\frac{1}{4}, \frac{3}{2})$

11.  $x^2 + y = 4$   
 $x - y = 2$

$y = -x^2 + 4$   
 $y = x - 2$

$(-3, -5)$   
 $(2, 0)$

12.  $x + 2y = 8$   
 $y = 2 + \ln x$

$y = -\frac{1}{2}x + 4$

$(2.318, 2.841)$

\*13. Use the given information to answer the questions.

\*14. Find the equation that is perpendicular to  $y = -2$  and goes through the point  $(5, 3)$ .

Hours studying per week	GPA
1	1.5
4	3
6	3.5
10	3.9
12	4.0

A) What is the equation of the line of best fit?

$y = .209x + 1.8$

B) Is this a good line to use when predicting?

No (GPA stops at 4.0)

C) If a person studies for 7 hours a week, what would you expect their grade point average to be?

3.264

D) If a person studies for 20 hours a week, what is their GPA? Does this make sense?

5.982

No! GPA stops at 4.0

$x = 5$

Write each system as a set of matrices and show what you would plug into the calculator to get the answer.

1.  $7x + 8y = 24$

ab  $x - 8y = 8$

$$\begin{bmatrix} 7 & 8 \\ 1 & -8 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 24 \\ 8 \end{bmatrix}$$

$$\begin{bmatrix} 7 & 8 \\ 1 & -8 \end{bmatrix}^{-1} \begin{bmatrix} 24 \\ 8 \end{bmatrix}$$

$$(4, -\frac{1}{2})$$

2.  $x - y = 0$

cd  $5x - 2y = 6$

$$\begin{bmatrix} 1 & -1 \\ 5 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 0 \\ 6 \end{bmatrix}$$

$$\begin{bmatrix} 1 & -1 \\ 5 & -2 \end{bmatrix}^{-1} \begin{bmatrix} 0 \\ 6 \end{bmatrix}$$

$$(2, 2)$$

3.  $-2x + 3y = 6$

fg  $x + 3y = 15$

$$\begin{bmatrix} -2 & 3 \\ 1 & 3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 6 \\ 15 \end{bmatrix}$$

$$\begin{bmatrix} -2 & 3 \\ 1 & 3 \end{bmatrix}^{-1} \begin{bmatrix} 6 \\ 15 \end{bmatrix}$$

$$(3, 4)$$

4.  $5x + 3y = 9$

hi  $2x - 4y = 14$

$$\begin{bmatrix} 5 & 3 \\ 2 & -4 \end{bmatrix}^{-1} \begin{bmatrix} 9 \\ 14 \end{bmatrix}$$

$$(3, -2)$$

5.  $3x + 2y = 7$

kl  $2x + 5y = 1$

$$\begin{bmatrix} 3 & 2 \\ 2 & 5 \end{bmatrix}^{-1} \begin{bmatrix} 7 \\ 1 \end{bmatrix}$$

$$(3, -1)$$

6.  $2x + y = 4$

pq  $2x - y = -1$

$$\begin{bmatrix} 2 & 1 \\ 2 & -1 \end{bmatrix}^{-1} \begin{bmatrix} 4 \\ -1 \end{bmatrix}$$

$$\left( \frac{3}{4}, \frac{5}{2} \right)$$

7.  $.03x + .04y = .75$

uv  $.02x + .06y = .9$

$$\begin{bmatrix} .03 & .04 \\ .02 & .06 \end{bmatrix}^{-1} \begin{bmatrix} .75 \\ .9 \end{bmatrix}$$

$$(9, 12)$$

8.  $4x + 3y = 3$

wx  $3x + 11y = 13$

$$\begin{bmatrix} 4 & 3 \\ 3 & 11 \end{bmatrix}^{-1} \begin{bmatrix} 3 \\ 13 \end{bmatrix}$$

$$\left( \frac{-6}{35}, \frac{43}{35} \right)$$

9.  $2x + 4y = 5$

ab  $16x + 50y = 55$

$$\begin{bmatrix} 2 & 4 \\ 16 & 50 \end{bmatrix}^{-1} \begin{bmatrix} 5 \\ 55 \end{bmatrix}$$

$$\left( \frac{5}{6}, \frac{5}{6} \right)$$

10.  $1.8x + 1.2y = 4$

cd  $9x + 6y = 3$

$$\begin{bmatrix} 1.8 & 1.2 \\ 9 & 6 \end{bmatrix}^{-1} \begin{bmatrix} 4 \\ 3 \end{bmatrix}$$

Singular matrix

No solutions

13.  $\frac{1}{3}x + y = -\frac{1}{3}$

kl  $5x - 3y = 7$

$$\begin{bmatrix} 1/3 & 1 \\ 5 & -3 \end{bmatrix}^{-1} \begin{bmatrix} -1/3 \\ 7 \end{bmatrix}$$

$$(1, -2/3)$$

\*16. Solve the system by hand.

$$y = 2x + 7$$

$$y = x^2 - 1$$

$$x^2 - 1 = 2x + 7$$

$$x^2 - 2x - 8 = 0$$

$$(x-4)(x+2) = 0$$

$$x=4 \quad x=-2$$

$$y=15 \quad y=3$$

\*18. Write the equation that contains the point  $(-1,2)$  and  $(5,6)$

$$m = \frac{4}{6} = \frac{2}{3}$$

$$y-6 = \frac{2}{3}(x-5)$$

$$y = \frac{2}{3}x + \frac{8}{3}$$

11.  $3x + 2y = 10$

fg  $2x + 5y = 3$

$$\begin{bmatrix} 3 & 2 \\ 2 & 5 \end{bmatrix}^{-1} \begin{bmatrix} 10 \\ 3 \end{bmatrix}$$

$$(4, -1)$$

14.  $3x - 2y = 5$

pl  $-6x + 4y = -10$

$$\begin{bmatrix} 3 & -2 \\ -6 & 4 \end{bmatrix}^{-1} \begin{bmatrix} 5 \\ 10 \end{bmatrix}$$

Singular matrix

Infinitely many

12.  $3.1x - 2.9y = -10.2$

hi  $31x - 12y = 34$

$$\begin{bmatrix} 3.1 & -2.9 \\ 31 & -12 \end{bmatrix}^{-1} \begin{bmatrix} -10.2 \\ 34 \end{bmatrix}$$

$$\left(\frac{130}{31}, 8\right)$$

15.  $\frac{3}{2}x - \frac{1}{5}y = 8$

wv  $-2x + 3y = 3$

$$\begin{bmatrix} 3/2 & -1/5 \\ -2 & 3 \end{bmatrix}^{-1} \begin{bmatrix} 8 \\ 3 \end{bmatrix}$$

$$(6, 5)$$

\*17. Find the line of best fit for the information given.

Year	US Exports(in billions)
2000	111.3
2001	101.3
2002	97.5
2003	97.4
2004	110.8
2005	120.4
2006	134

$$y = 4.271x + 97.571$$

\*19. Write the equation of a line that is parallel to  $2x-3y=4$  and goes through the point  $(-6,1)$ .

$$y = \frac{2}{3}x - \frac{4}{3} \quad m = \frac{2}{3}$$

$$y-1 = \frac{2}{3}(x+6)$$

$$y = \frac{2}{3}x + 5$$

Show all of your work on a separate piece of paper. Solve the system in any way you choose. Just show all of your work, or what you plugged into the calculator.

1. You are offered two different jobs selling dental supplies. One company offers a straight commission of 6% of sales. The other company offers a salary of \$350 per week plus 3% of sales. How much would you have to sell in a week in order to make the straight commission offer the better offer? **\$11,667 to sell**

$$y = .06x$$

$$y = .03x + 350$$

$$.06x = .03x + 350$$

2. Revenues for a redbox terminal on a particular Friday evening are \$557.5 for 320 rentals. The rental fee for movies is \$1.00 each and the rental fee for video games is \$3.50. Determine how many movies and games were rented.

**225 movies**  
**95 games**

3. A total of \$46,000 is invested in two corporate bonds that pay 6.75% and 7.25% simple interest. The investor wants an annual interest income of \$3245 from the investments. What is the most that can be invested in the 6.75% bond?

**\$18,000**

4. A chemist has a 25% solution of NaCl and a 55% solution of NaCl. She wants to make 10 liters of a 35% solution of NaCl. How much of each solution does she need?

**$\frac{10}{3}$  L of 55%**

**$\frac{20}{3}$  L of 25%**

5. Four large cheeseburgers and two chocolate shakes cost a total of \$7.90. Two shakes cost 15 cents more than one cheeseburger. What is the cost of a cheeseburger and the cost of a shake?

**cheeseburger \$1.55**

**shake \$0.85**

6. The sum of two numbers is 81. The difference of twice one number and three times the other is 62. Find the two numbers.

**61 and 20**

7. The perimeter of a rectangular floor is 90 feet. Find the dimensions of the floor if the length is twice the width.

**W = 15 feet**

**L = 30 feet**

- \*8. Find the equation of a line that contains the points (0, 4) and (-4, 6).

$$y = -\frac{1}{2}x + 4$$

- \*9. Find the equation of a line that is parallel to  $y = -3x + 4$  and goes through the point (-2, 4).

$$y = -3x - 2$$

- \*10. Solve the system of equations by any method you choose.

$$2x - 4y = 8$$

$$-x + 2y = 10$$



**No solution**